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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,483	04/19/2001	Louise C. Sengupta	283014-00018-1	8925

7590 06/12/2002

Robert P. Lenart
Eckert Seamans Cherin & Mellott, LLC
600 Grant Street, 44th Floor
Pittsburgh, PA 15219

EXAMINER

HAM, SEUNGSOOK

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 06/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/838,483

Applicant(s)

SENGUPTA ET AL.

Examiner

Seungsook Ham

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/19/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5, 6. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is incomplete. The preamble recites "A tunable phase shifter", however, the body of claim does not recite any phase shifting means.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Vandik et al. ("Ferroelectric Tuning of Planar and Bulk Microwave Devices").

Vandik et al. (fig. 14) discloses a tunable finline phase shifter comprising: a waveguide (p. 333, section 6), a finline substrate, a tunable dielectric layer (ferroelectric material) and first and second conductors positioned on the tunable dielectric layer and separated to form a gap s.

Regarding claim 4, it is inherent that a voltage source is applied to the first and second conductor to tune the phase shift (p. 334, section 6.2)

Regarding claim 13, Vandik et al. teaches the ferroelectric material can be composed of BSTO (p. 327, section 3.2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 5 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vandik et al. ("Ferroelectric Tuning of Planar and Bulk Microwave Devices").

Regarding to claim 3, it would have been obvious to one of ordinary skill in the art to adjust the gap between the first and second conductors in the device of Vandik et al. to obtain a desired coupling since such design technique is well known in the art.

Regarding to claim 5, forming the second conductor as RF ground is an obvious modification since one conductor should be grounded in order to function as a phase shifter using a tunable dielectric layer.

Regarding claims 14-18, it would have been obvious to use the materials recited in these claims in the device of Vandik et al. since they are well known ferroelectric material.

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vandik et al. ("Ferroelectric Tuning of Planar and Bulk Microwave Devices") in view of Conti (US '654).

Regarding claim 2, Vandik et al. does not show the gap having exponentially tapered portions adjacent to the first and the second ends. However, it should be noted that Vandik et al. shows the gap having stepped portions at the ends (see fig. 15) for impedance matching. Thus, it would have been obvious to one of ordinary skill in the art to provide the gap having exponentially tapered portions at the ends in the device of Vandik et al. for impedance matching since such design technique is well known in the art.

Regarding to claim 6, providing an RF choke in a phase shifter is well known in the art as shown by Conti (fig. 5, RF choke patches 82). Thus, it would have been obvious to provide an RF choke in the device of Vandik et al. to suppress high RF signals.

Claims 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vandik et al. ("Ferroelectric Tuning of Planar and Bulk Microwave Devices") in view of Bates (EP '393).

Vandik et al. does not show a first conductive plate/conductor being insulated from the waveguide and a second conductive plate/conductor being electrically connected to the waveguide. However, such finline structure is well known in the art. Bates (fig. 2) discloses a finline structure having a first conductive plate/conductor 4 being insulated from the waveguide 8, 9 and a second conductive plate/conductor 5 being electrically connected to the waveguide. Therefore, it would have been obvious to one of ordinary skill in the art to provide a first conductive plate/conductor being insulated from the waveguide and a second conductive plate/conductor being electrically connected to the waveguide in the device of Vandik et al. to couple the first conductive plate/conductor to the waveguide at microwave frequencies but isolated at lower frequencies (p. 4, lines 9-25).

Regarding claims 8, 9, 11 and 12, it would have been obvious to provide exponentially tapered gap between the first and second conductive plates in the device of Vandik et al. for impedance matching as shown by Bates (see fig. 1).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Buntschuh discloses a fin-line RF mixer; and

Swift et al. discloses a fin-line microwave device.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (703) 308-4090. The examiner can normally be reached on Monday - Thursday from 8:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on (703)308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

A handwritten signature in black ink, consisting of stylized loops and a long horizontal stroke extending to the right.

Seungsook Ham
Primary Examiner
Art Unit 2817

sh
June 10, 2002